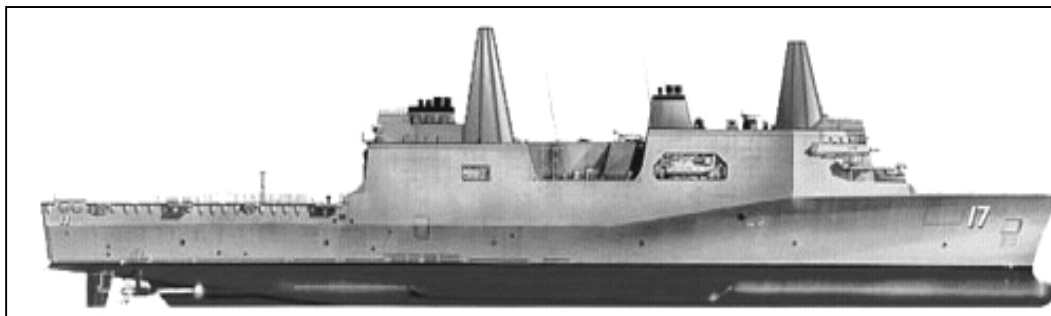


AMPHIBIOUS TRANSPORT DOCK SHIP (LPD 17)



USS *San Antonio* (LPD 17) will be a diesel-powered amphibious assault ship that will transport and deploy the combat and support elements of Marine Expeditionary Units/Brigades as a key component of amphibious task forces. LPD 17 will be capable of debarking forces by surface assault craft, including current and advanced amphibious assault vehicles (AAAV), air cushioned landing craft, conventional landing craft, as well as helicopters and MV-22s, contributing to dominant maneuver and focused logistics. A large flight deck will enable the aerial transport of troops and equipment, and a floodable well deck will permit operation of air-cushioned landing craft, conventional landing craft, and amphibious assault vehicles. The LPD 17 Class is required to conduct simultaneous day and night, well deck and flight deck operations and is expected have C4I capabilities sufficient to support operational maneuver from the Sea/Ship to objective maneuver operations.

Self-defense capabilities of the LPD 17 will include a cooperative engagement capability with other task force vessels, plus the Mk-2 variant of the ship self-defense system (SSDS), rolling airframe missile (RAM), and the Nulka decoy system to provide own-ship defense against anti-ship cruise missiles (ASCMs). Defense against surface threats will be provided by two Mk 46 30-mm gun systems that are currently being developed separately by the Marine Corps for use on the AAAV. Installed C4I systems will interoperate through a modern ship wide area network (SWAN).

BACKGROUND INFORMATION

LPD 17 completed a Milestone II review in June 1996, and OSD approved the current TEMP in February 2000. The TEMP is currently being updated because of program baseline breaches; this revision -- with updates to DT, OT, LFT&E plans and strategies -- is expected in 2QFY02.

OPTEVFOR conducted Early Operational Assessments (EOAs) OT-IA and OT-IB in FY95 and FY96. Design deficiencies identified during these EOAs included incompatibility with night vision devices (NVDs), self-defense systems performance, joint planning capability, design and equipment shortfalls in electronic warfare and intelligence facilities, and chemical, biological, and radiation (CBR) defense capabilities.

The current LFT&E strategy was approved by OSD in the February 2000 TEMP Update. A waiver from full-up, system-level testing was granted and an alternative LFT&E plan was approved by OSD in June 1996. The overall ship design and construction schedule has been delayed 24 months due to the shipbuilder's lack of readiness to begin construction. This delay has given the Navy more time for

development and improvement of LFT&E modeling and simulation tools and will permit missile/mine/torpedo encounter susceptibility studies to provide more credible hit distributions.

TEST & EVALUATION ACTIVITY

An OT-IIA was conducted from April 1999 through August 2000 by fleet experts in areas associated with amphibious warfare, organized under the leadership of COMOPTEVFOR and the Director, MCOTEA. The results were reported in April 2001 to DOT&E. Although the evaluations consisted for the most part of reviewing ship specifications and design drawings, the assessment team also examined results from modeling and simulation conducted as part of the ship design process.

TEST & EVALUATION ASSESSMENT

Overall, the LPD 17 class was designed to incorporate considerable amphibious lift as well as advances in shipboard application of information technology, radar cross-section reduction, and improved habitability for the crew and embarked Marines. However, the OT-IIA provided a number of key insights, which were, in some cases, design deficiencies identified as early as 1995 and re-discovered in subsequent EOAs. They still exist and there does not appear to be any resolution of them. These major shortcomings must be corrected to ensure that the LPD 17 is operationally effective and operationally suitable, discussed below:

- The only hard-kill system is the RAM. In conjunction with soft-kill systems (Giant, Nulka, and chaff), RAM must achieve the threshold requirement for ASCM defense. Defense against aircraft is vulnerability, because LPD 17, the first ship of the class to be delivered, is not expected to have any capability against these threats. In addition, there are concerns about the ship's capability to detect/track/engage some classes of ASCMs and its susceptibility to torpedoes and mines.
- Shortcomings exist in the ship's C4I systems, particularly as they relate to ship-to-tactical-shore data exchange. Specifically: (1) the ship's radio communication system does not support internet protocol data connectivity to shipboard landing force C4I systems through the ship's automatic data network system to the SWAN; (2) although the ship should provide a minimal supporting arms and tactical air coordination to support split-amphibious ready group operations, essential C4I systems are not part of the ship's baseline; (3) a key joint planning system necessary for originating and validating movement requests among Joint Task Force Service components is not provided; (4) servers for two landing force logistics automated information systems are not in the baseline; the Joint Deployable Information Support System is not included in the baseline, thereby compromising the ship's capability to support joint intelligence collection for the ship and embarked landing force elements; (5) "real-time" tracks provided by SSDS Mk 2 are not automatically fused with "near real-time" friendly unit positions and control measures provided by the ship's Amphibious Assault Direction System; and (6) there are not enough Enhanced Position Location Reporting System units to support the anticipated volume of position location information and other data needed for situational awareness.
- The LPD 17 will not fully support simultaneous night and day, flight-deck and well-deck operations because of a lack of NVD-compatible lighting and displays. This will limit the

capability to conduct simultaneous flight-deck operations and well-deck operations when NVDs are required because of safety concerns.

- The LPD 17 will be fitted with a collective protection system to protect berthing areas, messing and food preparation/storage areas, command and control spaces, and medical spaces, and a water wash-down system to reduce the effect of a CBR attack. However, the ship must interoperate with landing craft and vertical takeoff and landing aircraft, which might be exposed to agents during their operations and there are no provisions for decontaminating landing craft, aircraft, and landing force equipment in the well deck or on the flight deck. Chemical agent detectors/alarms are not integrated into the ship's information system. Furthermore, a tenet of chemical and biological warfare defense is to avoid contamination, thus requiring standoff detectors, however, none are required by the ORD.
- The LPD 17 has been designed to carry a substantial amount of cargo; however, there are no backup systems for the elevators that service two of the ship's three cargo and ammunition magazines.
- Other deficiencies discovered include the lack of the Level 5 Tactical Control System needed to launch, control, recover, and receive downlink information from unmanned aerial vehicles. There is insufficient support for MV-22 organizational-level maintenance.
- The Navy plans to conduct a Shock Trial on the lead ship in FY06, but DOT&E has concerns about the funding for this trial. In spite of Navy requests to cover increased costs estimates, the Shock Trial remains only partially funded. LFT&E modeling and simulation tools are under development, but thus far have limited capabilities and a weak test basis for validation.

LPD 17 will be equipped with sensors and systems for air surveillance and air warfare. The combat system's effectiveness depends strongly on the successful integration of these disparate sensor, weapon, and control element programs, and this task presents considerable risk. The most significant future T&E challenge for the LPD 17 will be credibly assessing the ship's self-defense capability against ASCMs. Safe and sufficiently realistic testing requires use of an unmanned Self-Defense Test Ship (SDTS) capable of being remotely operated during operationally realistic ship air defense scenarios. Results of these tests will also be used to validate modeling and simulation tools to estimate the Probability of Raid Annihilation for various scenarios. Consequently, the Navy should resource the installation of the LPD 17 combat system aboard an SDTS as well as the threat representative targets that are required.

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